This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method of inhibiting apoptosis in a subject, comprising: administering a therapeutically effective amount of at least one serine protease inhibitor in which the effective amount inhibits apoptosis, and monitoring a decrease in apoptosis; wherein the subject suffers from at least one of arthritis, muscular dystrophy, multiple sclerosis, arteriosclerosis, autoimmune disease, ischemia-reperfusion injury, neurodegenerative disease, myocardial infarction, or stroke.

2. (Cancelled).

3. (Previously Presented) The method of Claim 1, in which the serine protease inhibitor is α_1-antitrypsin, an oxidation-resistant α_1-antitrypsin Met^{358} variant or a free radical-resistant α_1-antitrypsin M^{358} variants.

4. (Previously Presented) The method of Claim 3 in which the effective amount is at least .001 and no greater than 70 g/kg body weight.

5. (Withdrawn) The method of Claim 1, in which the serine protease inhibitor is a substituted oxydiazole, thiadiazole, triazole peptoids, or combinations thereof.

6. (Withdrawn) The method of Claim 5, in which the serine protease inhibitor is derivatized by esterification, acetylation, or amidation, and wherein the derivatized serine protease inhibitor retains the inhibitory activity.

7. (Original) The method of Claim 1, further comprising administering at least one free radical scavenger or inhibitor.

8-9. (Cancelled).

10. (Original) The method of Claim 1, in which the subject is a human.

11. (Cancelled).

12. (Original) The method of Claim 1, in which the therapeutically effective amount is sufficient to provide at least 10 pM and no greater than 2 mM of the inhibitor in the biological fluid of the subject.

13. (Original) The method of Claim 12, in which the biological fluid is blood.

14. (Previously Presented) The method of Claim 1, in which the therapeutically effective amount is sufficient to provide at least .5 μM and no greater than 2000 μM in the biological fluid of the subject.

15. (Previously Presented) The method of Claim 1, in which the administering is parenterally, orally, vaginally, rectally, nasally, buccally, intravenously, intramuscularly, subcutaneously, intrathecally, epidurally, transdermally, intracerebroventricularly, by osmotic pump, by inhalation, or combinations thereof.

16. (Original) The method of Claim 1, in which the therapeutically effective amount is administered at least once daily and no more than once hourly.

17. (Original) The method of Claim 2, in which the monitoring is performed on a biopsy from the subject.

18-22. (Cancelled).

23. (Withdrawn) The method of Claim 25, in which the serine protease inhibitor is derivatized by esterification, acetylation, or amidation, and wherein the derivatized serine protease inhibitor retains the inhibitory activity.

24. (Withdrawn) The method of Claim 25, wherein the at least one cell is a cell of a subject, and wherein the amount is sufficient to bring the concentration of serine protease inhibitor in the subject's blood to at least .5 μM and no greater than 200 μM.

25-29. (Canceled)

30. (Previously Presented) The method of Claim 1 wherein the serine protease inhibitor inhibits at least one of trypsin, cathepsin G, tryptase TL-2, factor Xa, elastase, or proteinase-3.

31. (Previously Presented) The method of Claim 1, wherein the neurodegenerative disease is Alzheimer's disease or Downs Syndrome.

32. (Previously Presented) A method for treating a disease in a subject by inhibiting apoptosis, wherein the disease comprises arthritis, muscular dystrophy, multiple sclerosis, arteriosclerosis, autoimmune disease, ischemia-reperfusion injury, neurodegenerative

disease, myocardial infarction, or stroke, said method comprising administering a therapeutically effective amount of a serine protease inhibitor to inhibit apoptosis thereby ameliorating the disease in the subject.